

WHAT IS CLAIMED IS:

1. A feedthrough terminal assembly for an active implantable medical device, comprising:

5 a conductive ferrule conductively coupled to a housing of the active implantable medical device;

a feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;

10 an inductor closely associated with the capacitor in non-conductive relation; and

a conductive terminal pin extending through the capacitor and the inductor, the terminal pin extending through the inductor in non-conductive relation and conductively coupled to the first set of electrode plates.

15 2. The assembly of claim 1, wherein the active implantable medical device comprises a cardiac pacemaker, an implantable defibrillator, a cochlear implant, a neurostimulator, a drug pump, a ventricular assist device, an implantable sensing system, a gastric pacemaker or a prosthetic device.

20 3. The assembly of claim 1, wherein the inductor is bonded to the capacitor.

25 4. The assembly of claim 3, wherein the inductor is bonded to the capacitor utilizing a non-conductive polyimide, glass, Paralyne, a ceramic bonding material, epoxy, silicone, or a thermal plastic supportive tape adhesive.

5. The assembly of claim 1, wherein the inductor comprises a high permeability ferrite material.

30 6. The assembly of claim 5, wherein the inductor comprises a material selected from cobalt zinc ferrite, nickel zinc ferrite, manganese zinc ferrite, powdered iron, or molypermalloy.

7. The assembly of claim 1, including a conformal coating over the inductor.

8. The assembly of claim 7, wherein the conformal coating comprises Paralyne.

9. The assembly of claim 8, wherein the conformal coating comprises Paralyne C, D, E, or N.

10. The assembly of claim 1, including an insulator disposed between the inductor and the terminal pin.

11. The assembly of claim 10, wherein the insulator comprises a non-conductive polymer.

12. The assembly of claim 11, wherein the non-conductive polymer comprises an epoxy, a thermal-setting non-conductive adhesive, a non-conductive polyimide, or a silicone material.

13. The assembly of claim 1, including a second inductor through which the terminal pin extends in non-conductive relation.

14. The assembly of claim 13, wherein the inductors are disposed adjacent to one another.

15. The assembly of claim 14, comprising at least one additional inductor stacked onto another one of the inductors.

16. The assembly of claim 14, wherein the inductors are each comprised of materials having different physical or electrical properties.

17. The assembly of claim 14, wherein the inductors are each comprised

of materials having the same physical or electrical properties.

18. The assembly of claim 1, wherein the capacitor and the inductor are housed within the ferrule.

19. The assembly of claim 18, including an insulative cap disposed over the inductor opposite the capacitor.

20. The assembly of claim 13, wherein the inductors are disposed on opposite sides of the capacitor.

21. The assembly of claim 20, wherein at least one of the inductors is disposed on a body fluid side of the feedthrough terminal assembly.

22. The assembly of claim 20, wherein the second inductor is disposed adjacent to the ferrule.

23. The assembly of claim 20, wherein the inductors are disposed adjacent to opposing surfaces of the capacitor.

24. The assembly of claim 23, wherein the inductors are bonded to the capacitor.

25. The assembly of claim 23, wherein the capacitor and the inductors are disposed within and conductively isolated from the ferrule.

26. The assembly of claim 1, wherein the capacitor is disposed on a body fluid side of the feedthrough terminal assembly.

27. The assembly of claim 1, wherein the feedthrough capacitor comprises first and second feedthrough capacitors associated with the inductor in non-conductive relation.

28. The assembly of claim 27, wherein the first and second feedthrough capacitors are disposed adjacent to opposing surfaces of the inductor.

29. The assembly of claim 28, wherein the capacitors are bonded to the inductor.

30. The assembly of claim 28, wherein each capacitor is internally grounded.

31. The assembly of claim 27, wherein the first and second capacitors each include a first set of electrode plates conductively coupled to the terminal pin, and a second set of electrode plates conductively coupled to the ferrule.

32. The assembly of claim 31, wherein the first capacitor comprises an externally grounded capacitor, and the second capacitor comprises an internally grounded capacitor, the feedthrough terminal assembly further including a conductive material extending through both the first and second feedthrough capacitors to conductively couple the second set of electrode plates of the second capacitor with the second set of electrode plates of the first capacitor.

33. The assembly of claim 32, wherein the first and second feedthrough capacitors are disposed adjacent to opposing surfaces of the inductor.

34. The assembly of claim 32, wherein the conductive material comprises a thermal setting conductive adhesive, a solder, or a solder paste.

35. The assembly of claim 32, wherein the conductive material comprises a conductive pin.

36. The assembly of claim 35, wherein the conductive pin comprises a nail head pin.

37. The assembly of claim 35, wherein the conductive pin comprises a pin attached to an underlying hermetic insulator.

38. The assembly of claim 1, including an hermetic insulator disposed between the terminal pin and the ferrule, wherein the capacitor is disposed adjacent to the hermetic insulator.

39. The assembly of claim 38, wherein the inductor and the capacitor each include an aperture through which a leak detection gas can be detected.

40. The assembly of claim 1, wherein the capacitor's second set of electrode plates are externally grounded to the ferrule.

41. The assembly of claim 1, wherein the capacitor's second set of electrode plates are internally grounded to the ferrule.

42. The assembly of claim 1, wherein the terminal pin is wound about the inductor to form multiple turns.

43. The assembly of claim 42, wherein adjacent portions of the wound terminal pin are electrically insulated from one another.

44. The assembly of claim 43, wherein the adjacent portions of the wound terminal pin are encased in a non-conductive material.

45. The assembly of claim 44, wherein the adjacent portions of the wound terminal pin are encased within a non-conductive sleeve.

46. The assembly of claim 42, wherein the inductor includes a notch for receiving the wound terminal pin.

47. The assembly of claim 46, including a ramp formed in the notch.

48. The assembly of claim 46, wherein the inductor includes multiple notches therein.

49. The assembly of claim 48, wherein each notch accommodates a separate terminal pin therein.

50. The assembly of claim 46, wherein the notch includes multiple slots for receiving corresponding multiple turns of the terminal pin.

51. The assembly of claim 46, wherein the notch comprises contoured corners for accommodating the terminal pin.

52. The assembly of claim 1, including a plurality of distinct feedthrough capacitors each having a respective terminal pin extending therethrough, wherein the inductor is non-conductively associated with each of the plurality of feedthrough capacitors.

53. The assembly of claim 1, including means for maintaining the inductor in close association with the capacitor without forming a direct physical attachment therebetween.

54. The assembly of claim 53, wherein the maintaining means comprises a lock associated with the terminal pin.

55. The assembly of claim 54, wherein the lock comprises a mechanical lock.

56. The assembly of claim 54, wherein the lock comprises a deformation in the terminal pin.

57. The assembly of claim 54, wherein the lock comprises a cured polymer.

58. The assembly of claim 53, wherein the maintaining means comprises a wire bond pad attached to the terminal pin.

59. The assembly of claim 58, including a non-conductive substrate  
5 disposed between the wire bond pad and the inductor.

60. A feedthrough terminal assembly for an active implantable medical device, comprising:

10 a conductive ferrule conductively coupled to a housing of the active implantable medical device;

a feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;

a first inductor closely associated with the capacitor in non-conductive relation;

15 a second inductor closely associated with the capacitor in non-conductive relation, the second inductor being disposed opposite the first conductor relative to the capacitor; and

a conductive terminal pin extending through the capacitor and the inductors, the terminal pin extending through the inductors in non-conductive relation  
20 and conductively coupled to the first set of electrode plates.

61. The assembly of claim 60, wherein the active implantable medical device comprises a cardiac pacemaker, an implantable defibrillator, a cochlear implant, a neurostimulator, a drug pump, a ventricular assist device, an implantable  
25 sensing system, a gastric pacemaker or a prosthetic device.

62. The assembly of claim 60, wherein the inductors are bonded to the capacitor utilizing a non-conductive polyimide, glass, Paralyne, a ceramic bonding material, epoxy, silicone, or a thermal plastic supportive tape adhesive.

63. The assembly of claim 60, wherein the inductors comprise a high permeability ferrite material.

64. The assembly of claim 63, wherein the inductors comprise a material selected from cobalt zinc ferrite, nickel zinc ferrite, manganese zinc ferrite, powdered iron, or molypermalloy.

5           65. The assembly of claim 60, including a conformal coating over the inductors.

66. The assembly of claim 65, wherein the conformal coating comprises Paralyne.

10           67. The assembly of claim 60, including insulators disposed between the inductors and the terminal pin.

15           68. The assembly of claim 67, wherein the insulators comprise a non-conductive polymer.

69. The assembly of claim 60, including a third inductor through which the terminal pin extends in non-conductive relation.

20           70. The assembly of claim 69, wherein the first and third inductors are disposed adjacent to one another.

71. The assembly of claim 70, comprising at least one additional inductor stacked onto the third inductor.

25           72. The assembly of claim 60, wherein the inductors are each comprised of materials having different physical or electrical properties.

30           73. The assembly of claim 60, wherein the inductors are each comprised of materials having the same physical or electrical properties.

74. The assembly of claim 60, wherein the capacitor and the inductors are



housed within the ferrule.

75. The assembly of claim 74, including an insulative cap disposed over one of the inductors opposite the capacitor.

76. The assembly of claim 60, wherein at least one of the inductors is disposed on a body fluid side of the feedthrough terminal assembly.

77. The assembly of claim 60, wherein the second inductor is disposed adjacent to the ferrule.

78. The assembly of claim 60, wherein the inductors are disposed adjacent to opposing surfaces of the capacitor.

79. The assembly of claim 78, wherein the inductors are bonded to the capacitor.

80. The assembly of claim 78, wherein the capacitor and the inductors are disposed within and conductively isolated from the ferrule.

81. The assembly of claim 60, wherein the capacitor is disposed on a body fluid side of the feedthrough terminal assembly.

82. The assembly of claim 60, including an hermetic insulator disposed between the terminal pin and the ferrule, wherein the capacitor is disposed adjacent to the hermetic insulator.

83. The assembly of claim 60, wherein the capacitor's second set of electrode plates are externally grounded to the ferrule.

84. The assembly of claim 60, wherein the capacitor's second set of electrode plates are internally grounded to the ferrule.

85. The assembly of claim 60, wherein the terminal pin is wound about at least one of the inductors to form multiple turns.

86. The assembly of claim 85, wherein adjacent portions of the wound terminal pin are electrically insulated from one another.

87. The assembly of claim 86, wherein the adjacent portions of the wound terminal pin are encased in a non-conductive material.

88. The assembly of claim 87, wherein the adjacent portions of the wound terminal pin are encased within a non-conductive sleeve.

89. The assembly of claim 85, wherein at least one of the inductors includes a notch for receiving the wound terminal pin.

90. The assembly of claim 89, including a ramp formed in the notch.

91. The assembly of claim 89, wherein the inductor includes multiple notches therein.

92. The assembly of claim 91, wherein each notch accommodates a separate terminal pin therein.

93. The assembly of claim 89, wherein the notch includes multiple slots for receiving corresponding multiple turns of the terminal pin.

94. The assembly of claim 89, wherein the notch comprises contoured corners for accommodating the terminal pin.

95. The assembly of claim 60, including means for maintaining at least one of the inductors in close association with the capacitor without forming a direct physical attachment therebetween.

96 The assembly of claim 95, wherein the maintaining means comprises a lock associated with the terminal pin.

97. The assembly of claim 96, wherein the lock comprises a mechanical lock.

98. The assembly of claim 96, wherein the lock comprises a deformation in the terminal pin.

99. The assembly of claim 96, wherein the lock comprises a cured polymer.

100. The assembly of claim 95, wherein the maintaining means comprises a wire bond pad attached to the terminal pin.

101. A feedthrough terminal assembly for an active implantable medical device, comprising:

a conductive ferrule conductively coupled to a housing of the active implantable medical device;

a first feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;

a second feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;

an inductor disposed between and closely associated with the capacitors in non-conductive relation; and

a conductive terminal pin extending through the capacitors and the inductor, the terminal pin extending through the inductor in non-conductive relation and conductively coupled to the first sets of electrode plates of both capacitors.

102. The assembly of claim 101, wherein the active implantable medical device comprises a cardiac pacemaker, an implantable defibrillator, a cochlear implant, a neurostimulator, a drug pump, a ventricular assist device, an implantable

sensing system, a gastric pacemaker or a prosthetic device.

103. The assembly of claim 101, wherein the inductor is bonded to the capacitors.

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104. The assembly of claim 103, wherein the inductor is bonded to the capacitors utilizing a non-conductive polyimide, glass, Paralyne, a ceramic bonding material, epoxy, silicone, or a thermal plastic supportive tape adhesive.

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105. The assembly of claim 101, wherein the inductor comprises a high permeability ferrite material.

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106. The assembly of claim 105, wherein the inductor comprises a material selected from cobalt zinc ferrite, nickel zinc ferrite, manganese zinc ferrite, powdered iron, or molypermalloy.

107. The assembly of claim 101, including a conformal coating over the inductor.

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108. The assembly of claim 107, wherein the conformal coating comprises Paralyne C, D, E, or N.

109. The assembly of claim 101, including an insulator disposed between the inductor and the terminal pin.

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110. The assembly of claim 109, wherein the insulator comprises a non-conductive polymer.

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111. The assembly of claim 110, wherein the non-conductive polymer comprises an epoxy, a thermal-setting non-conductive adhesive, a non-conductive polyimide, or a silicone material.

112. The assembly of claim 101, wherein at least one of the capacitors and the inductor are housed within the ferrule.

113. The assembly of claim 101, wherein at least one of the capacitors is disposed on a body fluid side of the feedthrough terminal assembly.

114. The assembly of claim 101, wherein the first and second feedthrough capacitors are disposed adjacent to opposing surfaces of the inductor.

115. The assembly of claim 114, wherein the capacitors are bonded to the inductor.

116. The assembly of claim 114, wherein each capacitor is internally grounded.

117. The assembly of claim 101, wherein the first and second capacitors each include a first set of electrode plates conductively coupled to the terminal pin, and a second set of electrode plates conductively coupled to the ferrule.

118. The assembly of claim 117, wherein the first capacitor comprises an externally grounded capacitor, and the second capacitor comprises an internally grounded capacitor, the feedthrough terminal assembly further including a conductive material extending through both the first and second feedthrough capacitors to conductively couple the second set of electrode plates of the second capacitor with the second set of electrode plates of the first capacitor.

119. The assembly of claim 118, wherein the first and second feedthrough capacitors are disposed adjacent to opposing surfaces of the inductor.

120. The assembly of claim 118, wherein the conductive material comprises a thermal setting conductive adhesive, a solder, or a solder paste.

121. The assembly of claim 118, wherein the conductive material comprises a conductive pin.

122. The assembly of claim 121, wherein the conductive pin comprises a  
5 nail head pin.

123. The assembly of claim 121, wherein the conductive pin comprises a pin attached to an underlying hermetic insulator.

10 124. The assembly of claim 101, including an hermetic insulator disposed between the terminal pin and the ferrule, wherein at least one of the capacitors is disposed adjacent to the hermetic insulator.

15 125. The assembly of claim 124, wherein at least one of the inductors and the capacitors each include an aperture through which a leak detection gas can be detected.

126. The assembly of claim 101, wherein at least one of the capacitors' second set of electrode plates are externally grounded to the ferrule.

20 127. The assembly of claim 101, wherein at least one of the capacitors' second set of electrode plates are internally grounded to the ferrule.

25 128. The assembly of claim 101, wherein the terminal pin is wound about the inductor to form multiple turns.

129. The assembly of claim 128, wherein adjacent portions of the wound terminal pin are electrically insulated from one another.

30 130. The assembly of claim 129, wherein the adjacent portions of the wound terminal pin are encased in a non-conductive material.

131. The assembly of claim 130, wherein the adjacent portions of the wound terminal pin are encased within a non-conductive sleeve.

132. The assembly of claim 128, wherein the inductor includes a notch for receiving the wound terminal pin.

133. The assembly of claim 132, including a ramp formed in the notch.

134. The assembly of claim 132, wherein the inductor includes multiple notches therein.

135. The assembly of claim 134, wherein each notch accommodates a separate terminal pin therein.

136. The assembly of claim 132, wherein the notch includes multiple slots for receiving corresponding multiple turns of the terminal pin.

137. The assembly of claim 132, wherein the notch comprises contoured corners for accommodating the terminal pin.

138. The assembly of claim 101, including means for maintaining the inductor in close association with at least one of the capacitors without forming a direct physical attachment therebetween.

139. The assembly of claim 138, wherein the maintaining means comprises a lock associated with the terminal pin.

140. The assembly of claim 139, wherein the lock comprises a mechanical lock.

141. The assembly of claim 139, wherein the lock comprises a deformation in the terminal pin.

142. The assembly of claim 139, wherein the lock comprises a cured polymer.

143. The assembly of claim 138, wherein the maintaining means  
5 comprises a wire bond pad attached to the terminal pin.

144. A feedthrough terminal assembly for an active implantable medical device, comprising;

10 a conductive ferrule conductively coupled to a housing of the active implantable medical device;

an externally grounded feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;

15 an internally grounded feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates of the internally grounded capacitor being conductively coupled to the second set of electrode plates of the first capacitor;

20 an inductor disposed between and closely associated with the capacitors in non-conductive relation; and

a conductive terminal pin extending through the capacitors and the inductor, the terminal pin extending through the inductor in non-conductive relation and conductively coupled to the first sets of electrode plates of both capacitors.

25 145. The assembly of claim 144, wherein the active implantable medical device comprises a cardiac pacemaker, an implantable defibrillator, a cochlear implant, a neurostimulator, a drug pump, a ventricular assist device, an implantable sensing system, a gastric pacemaker or a prosthetic device.

30 146. The assembly of claim 144, wherein the inductor comprises a high permeability ferrite material.

147. The assembly of claim 146, wherein the inductor comprises a



material selected from cobalt zinc ferrite, nickel zinc ferrite, manganese zinc ferrite, powdered iron, or molypermalloy.

148. The assembly of claim 144, including a conformal coating over the inductor.

149. The assembly of claim 148, wherein the conformal coating comprises Paralyne.

150. The assembly of claim 149, wherein the conformal coating comprises Paralyne C, D, E, or N.

151. The assembly of claim 144, including a conductive material extending through both the first and second feedthrough capacitors to conductively couple the second set of electrode plates of the second capacitor with the second set of electrode plates of the first capacitor.

152. The assembly of claim 151, wherein the capacitors are disposed adjacent to opposing surfaces of the inductor.

153. The assembly of claim 151, wherein the conductive material comprises a thermal setting conductive adhesive, a solder, or a solder paste.

154. The assembly of claim 151, wherein the conductive material comprises a conductive pin.

155. The assembly of claim 154, wherein the conductive pin comprises a nail head pin.

156. The assembly of claim 154, wherein the conductive pin comprises a pin attached to an underlying hermetic insulator.

157. The assembly of claim 144, wherein the terminal pin is wound about the inductor to form multiple turns.

158. The assembly of claim 157, wherein adjacent portions of the wound terminal pin are electrically insulated from one another.

159. The assembly of claim 158, wherein the adjacent portions of the wound terminal pin are encased in a non-conductive material.

160. The assembly of claim 159, wherein the adjacent portions of the wound terminal pin are encased within a non-conductive sleeve.

161. The assembly of claim 157, wherein the inductor includes a notch for receiving the wound terminal pin.

162. The assembly of claim 161, including a ramp formed in the notch.

163. The assembly of claim 161, wherein the inductor includes multiple notches therein.

164. The assembly of claim 163, wherein each notch accommodates a separate terminal pin therein.

165. The assembly of claim 161, wherein the notch includes multiple slots for receiving corresponding multiple turns of the terminal pin.

166. The assembly of claim 161, wherein the notch comprises contoured corners for accommodating the terminal pin.

167. The assembly of claim 144, including means for maintaining the inductor in close association with at least one of the capacitors without forming a direct physical attachment therebetween.

168. The assembly of claim 167, wherein the maintaining means comprises a lock associated with the terminal pin.

169. The assembly of claim 168, wherein the lock comprises a mechanical lock.

170. The assembly of claim 168, wherein the lock comprises a deformation in the terminal pin.

171. The assembly of claim 168, wherein the lock comprises a cured polymer.

172. The assembly of claim 167, wherein the maintaining means comprises a wire bond pad attached to the terminal pin.

173. A feedthrough terminal assembly, comprising:  
a conductive ferrule;  
a feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;  
an inductor closely associated with the capacitor in non-conductive relation;  
and  
a conductive terminal pin extending through the capacitor and conductively coupled to the first set of electrode plates, and extending through the inductor in non-conductive relation thereto.

174. The assembly of claim 173, wherein adjacent portions of the wound terminal pin are electrically insulated from one another.

175. The assembly of claim 174, wherein the adjacent portions of the wound terminal pin are encased in a non-conductive material.

176. The assembly of claim 175, wherein the adjacent portions of the

wound terminal pin are encased within a non-conductive sleeve.

177. The assembly of claim 173, wherein the inductor includes a notch for receiving the wound terminal pin.

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178. The assembly of claim 177, including a ramp formed in the notch.

179. The assembly of claim 177, wherein the inductor includes multiple notches therein.

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180. The assembly of claim 179, wherein each notch accommodates a separate terminal pin therein.

181. The assembly of claim 177, wherein the notch includes multiple slots for receiving corresponding multiple turns of the terminal pin.

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182. The assembly of claim 177, wherein the notch comprises contoured corners for accommodating the terminal pin.

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183. The assembly of claim 173, including means for maintaining the inductor in close association with the capacitor without forming a direct physical attachment therebetween.

184. The assembly of claim 183, wherein the maintaining means comprises a lock associated with the terminal pin.

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185. The assembly of claim 184, wherein the lock comprises a mechanical lock.

186. The assembly of claim 184, wherein the lock comprises a deformation in the terminal pin.

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187. The assembly of claim 184, wherein the lock comprises a cured polymer.

188. The assembly of claim 183, wherein the maintaining means  
5 comprises a wire bond pad attached to the terminal pin.

189. The assembly of claim 188, including a non-conductive substrate disposed between the wire bond pad and the inductor.

10 190. A feedthrough terminal assembly for an active implantable medical device, comprising:

a conductive ferrule conductively coupled to a housing of the active implantable medical device;

15 a feedthrough capacitor having first and second sets of electrode plates, the second set of electrode plates being conductively coupled to the ferrule;

an inductor associated with the capacitor in non-conductive relation;

means for maintaining the inductor in close association with the capacitor without forming a direct physical attachment therebetween; and

20 a conductive terminal pin extending through the capacitor and the inductor, the terminal pin extending through the inductor in non-conductive relation and conductively coupled to the first set of electrode plates.

25 191. The assembly of claim 190, wherein the maintaining means comprises a lock associated with the terminal pin.

192. The assembly of claim 191, wherein the lock comprises a mechanical lock.

30 193. The assembly of claim 191, wherein the lock comprises a deformation in the terminal pin.

194. The assembly of claim 191, wherein the lock comprises a cured

polymer.

195. The assembly of claim 190, wherein the maintaining means comprises a wire bond pad attached to the terminal pin.

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196. The assembly of claim 195, including a non-conductive substrate disposed between the wire bond pad and the inductor.

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197. The assembly of claim 190, wherein the active implantable medical device comprises a cardiac pacemaker, an implantable defibrillator, a cochlear implant, a neurostimulator, a drug pump, a ventricular assist device, an implantable sensing system, a gastric pacemaker or a prosthetic device.

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198. The assembly of claim 190, wherein the inductor is bonded to the capacitor utilizing a non-conductive polyimide, glass, Paralyne, a ceramic bonding material, epoxy, silicone, or a thermal plastic supportive tape adhesive.

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199. The assembly of claim 190, wherein the inductor comprises a material selected from cobalt zinc ferrite, nickel zinc ferrite, manganese zinc ferrite, powdered iron, or molypermalloy.

200. The assembly of claim 190, including a conformal coating over the inductor comprising Paralyne.

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201. The assembly of claim 190, including an insulator disposed between the inductor and the terminal pin, wherein the insulator comprises a non-conductive polymer.

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202. The assembly of claim 201, wherein the non-conductive polymer comprises an epoxy, a thermal-setting non-conductive adhesive, a non-conductive polyimide, or a silicone material.

203. The assembly of claim 190, including a second inductor through which the terminal pin extends in non-conductive relation.

204. The assembly of claim 203, wherein the inductors are disposed adjacent to one another.

205. The assembly of claim 204, comprising at least one additional inductor stacked onto another one of the inductors.

206. The assembly of claim 204, wherein the inductors are each comprised of materials having different physical or electrical properties.

207. The assembly of claim 204, wherein the inductors are each comprised of materials having the same physical or electrical properties.

208. The assembly of claim 190, wherein the capacitor and the inductor are housed within the ferrule.

209. The assembly of claim 208, including an insulative cap disposed over the inductor opposite the capacitor.

210. The assembly of claim 203, wherein the inductors are disposed on opposite sides of the capacitor.

211. The assembly of claim 210, wherein at least one of the inductors is disposed on a body fluid side of the feedthrough terminal assembly.

212. The assembly of claim 210, wherein the second inductor is disposed adjacent to the ferrule.

213. The assembly of claim 210, wherein the inductors are disposed adjacent to opposing surfaces of the capacitor.

214. The assembly of claim 213, wherein the inductors are bonded to the capacitor.

5           215. The assembly of claim 213, wherein the capacitor and the inductors are disposed within and conductively isolated from the ferrule.

216. The assembly of claim 190, wherein the capacitor is disposed on a body fluid side of the feedthrough terminal assembly.

10           217. The assembly of claim 190, wherein the feedthrough capacitor comprises first and second feedthrough capacitors associated with the inductor in non-conductive relation.

15           218. The assembly of claim 217, wherein the first and second feedthrough capacitors are disposed adjacent to opposing surfaces of the inductor.

219. The assembly of claim 218, wherein the capacitors are bonded to the inductor.

20           220. The assembly of claim 218, wherein each capacitor is internally grounded.

25           221. The assembly of claim 217, wherein the first and second capacitors each include a first set of electrode plates conductively coupled to the terminal pin, and a second set of electrode plates conductively coupled to the ferrule.

30           222. The assembly of claim 221, wherein the first capacitor comprises an externally grounded capacitor, and the second capacitor comprises an internally grounded capacitor, the feedthrough terminal assembly further including a conductive material extending through both the first and second feedthrough capacitors to conductively couple the second set of electrode plates of the second



capacitor with the second set of electrode plates of the first capacitor.

223. The assembly of claim 222, wherein the first and second feedthrough capacitors are disposed adjacent to opposing surfaces of the inductor.

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224. The assembly of claim 222, wherein the conductive material comprises a thermal setting conductive adhesive, a solder, or a solder paste.

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225. The assembly of claim 222, wherein the conductive material comprises a conductive pin.

226. The assembly of claim 225, wherein the conductive pin comprises a nail head pin.

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227. The assembly of claim 225, wherein the conductive pin comprises a pin attached to an underlying hermetic insulator.

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228. The assembly of claim 190, including an hermetic insulator disposed between the terminal pin and the ferrule, wherein the capacitor is disposed adjacent to the hermetic insulator.

229. The assembly of claim 228, wherein the inductor and the capacitor each include an aperture through which a leak detection gas can be detected.

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230. The assembly of claim 190, wherein the capacitor's second set of electrode plates are externally grounded to the ferrule.

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231. The assembly of claim 190, wherein the capacitor's second set of electrode plates are internally grounded to the ferrule.